

## Seminar & Events Bulletin: RTG Working Seminar on Geometry, Dynamics and Topology

01-01-2013 to 06-30-2013

Wednesday, February 20, 2013

4:00pm-6:00pm **RTG Working Seminar on Geometry, Dynamics and Topology** -- Ralf Spatzier (U Michigan) *On automorphisms of convex cones I (after Benoist)* -- 3096 East Hall

Wednesday, February 27, 2013

4:00pm-6:00pm **RTG Working Seminar on Geometry, Dynamics and Topology** -- Ralf Spatzier (U Michigan) *Automorphisms of Convex Projective Cones* -- 3096 East Hall

Wednesday, March 13, 2013

4:00pm-5:00pm **RTG Working Seminar on Geometry, Dynamics and Topology** -- Ralf Spatzier (U Michigan) *Benoist' dichotomy on Zariski density* -- 3096 East Hall

Wednesday, March 20, 2013

4:10pm-6:00pm **RTG Working Seminar on Geometry, Dynamics and Topology** -- Andrew Zimmer (U Michigan) *Dynamics of the geodesic flow on divisible strictly convex sets* -- 3096 East Hall

Wednesday, March 27, 2013

4:00pm-5:30pm **RTG Working Seminar on Geometry, Dynamics and Topology** -- Andrew Zimmer (U Michigan) *More on convex divisible sets* -- 3096 East Hall

Wednesday, April 03, 2013

4:00pm-6:00pm **RTG Working Seminar on Geometry, Dynamics and Topology** -- Jeff Danciger (UT Austin) *Geometric transitions in Lorentzian geometry* -- 3096 East Hall

Wednesday, April 10, 2013

4:00pm-5:00pm **RTG Working Seminar on Geometry, Dynamics and Topology** -- Andrew Zimmer (U Michigan) *More on convex divisible sets* -- 3096 East Hall

Wednesday, April 17, 2013

4:00pm-6:00pm **RTG Working Seminar on Geometry, Dynamics and Topology** -- Tengren Zhang (U Michigan) *Convex real projective structures on surfaces* -- 3096 East Hall

Wednesday, April 24, 2013

4:00pm-6:00pm **RTG Working Seminar on Geometry, Dynamics and Topology** -- Tengren Zhang (U Michigan) *More on convex projective structures on surfaces* -- 3096 East Hall

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**Abstracts**

**RTG Working Seminar on Geometry, Dynamics and Topology**

**Wednesday, February 20, 2013, 4:00pm-6:00pm**

**3096 East Hall**

**Ralf Spatzier (U Michigan)**

*On automorphisms of convex cones I (after Benoist)*

I will discuss a paper of Benoist of automorphisms of convex cones. This give highly interesting examples of discrete groups in  $GL(n, \mathbb{R})$ .

**RTG Working Seminar on Geometry, Dynamics and Topology**

**Wednesday, February 27, 2013, 4:00pm-6:00pm**

**3096 East Hall**

**Ralf Spatzier (U Michigan)**

*Automorphisms of Convex Projective Cones*

After a little more survey, I will start to discuss the results of Benoist' Invnetiones paper on automorphisms of convex projective cones and a dichotomy on Zariski density.

**RTG Working Seminar on Geometry, Dynamics and Topology**

**Wednesday, March 13, 2013, 4:00pm-5:00pm**

**3096 East Hall**

**Ralf Spatzier (U Michigan)**

*Benoist' dichotomy on Zariski density*

I will explain more on Benoist' dichotomy on Zariski density

**RTG Working Seminar on Geometry, Dynamics and Topology**

**Wednesday, March 20, 2013, 4:10pm-6:00pm**

**3096 East Hall**

**Andrew Zimmer (U Michigan)**

*Dynamics of the geodesic flow on divisible strictly convex sets*

In "Convexes Divisible I," Benoist proved that the following are equivalent for properly convex divisible sets (1) strict convex boundary (2) Gromov hyperbolic dividing group (3)  $C_1$  boundary (4) Anosov geodesic flow. I plan to carefully go through the details of Benoist's proof.

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**RTG Working Seminar on Geometry, Dynamics and Topology**

**Wednesday, March 27, 2013, 4:00pm-5:30pm**

**3096 East Hall**

**Andrew Zimmer (U Michigan)**

*More on convex divisible sets*

In this we will sketch applications of Benoist's results on the dynamics of the geodesic flow of divisible convex sets and on Zariski density of the dividing group.

**RTG Working Seminar on Geometry, Dynamics and Topology**

**Wednesday, April 03, 2013, 4:00pm-6:00pm**

**3096 East Hall**

**Jeff Danciger (UT Austin)**

*Geometric transitions in Lorentzian geometry*

A complete flat Lorentzian three-manifold is the quotient of the  $(2+1)$ -dimensional Minkowski space by a group of isometries acting properly discontinuously. If the group acting is a free group, the quotient is called a Margulis space-time. We show that (most) Margulis space-times arise as rescaled limits of collapsing manifolds modeled on anti de Sitter (AdS) geometry, a negatively curved Lorentzian model geometry. This is joint work with François Guéritaud and Fanny Kassel.

The talk will have two parts. Part I will develop a framework for geometric transitions. Specifically we explain how to make sense of paths of geometric structures that change geometry (e.g. from curved to flat). Part II will focus on the geometry and topology of Lorentzian manifolds, and then give the main construction.

**RTG Working Seminar on Geometry, Dynamics and Topology**

**Wednesday, April 10, 2013, 4:00pm-5:00pm**

**3096 East Hall**

**Andrew Zimmer (U Michigan)**

*More on convex divisible sets*

We will finish the discussion of Benoist's results on the dynamics of the geodesic flow of divisible convex sets and on Zariski density of the dividing group.

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**RTG Working Seminar on Geometry, Dynamics and Topology**

**Wednesday, April 17, 2013, 4:00pm-6:00pm**

**3096 East Hall**

**Tengren Zhang (U Michigan)**

*Convex real projective structures on surfaces*

Let  $M$  be a closed orientable surface of genus  $g > 1$ . Goldman proved that the deformation space of convex projective structures on  $M$  is a cell of dimension  $16g-16$ . Shortly after, Choi and Goldman also proved that this deformation space is in fact the Hitchin component of the space of representations of the fundamental group of  $M$  into  $SL(3, \mathbb{R})$ . I will explain the proof of these two results.

**RTG Working Seminar on Geometry, Dynamics and Topology**

**Wednesday, April 24, 2013, 4:00pm-6:00pm**

**3096 East Hall**

**Tengren Zhang (U Michigan)**

*More on convex projective structures on surfaces*

I will continue where I left off last week and explain the proof of a theorem by Choi and Goldman: If  $M$  is a closed orientable surface of genus  $g > 1$ , the deformation space of convex real projective structures on  $M$  is the Hitchin component of the space of representations of the fundamental group of  $M$  into  $SL(3, \mathbb{R})$ .